Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Previously Presented) A process for production of a crystalline S-layer protein comprising:

(a) transforming a gram-negative prokaryotic host cell with a full length nucleic acid encoding an S-layer protein selected from the group consisting of

(i) a nucleic acid comprising a nucleotide sequence from position 1 to 3684 of SEQ ID NO:1,

(ii) a nucleic acid comprising a nucleotide sequence which encodes an amino acid sequence according to SEQ ID NO:2, and

(iii) a nucleic acid comprising a nucleotide sequence which hybridizes with at least one of the nucleic acid of (i) or (ii) under stringent conditions;

(b) culturing the host cell under conditions which induce expression of the nucleic acid and production of the corresponding protein, and

(c) isolating the protein from the host cell.

2. (Previously Presented) The process as claimed in claim 1, wherein the gram-negative prokaryotic host cell is an E. coli host cell.

3. (Previously Presented) The process as claimed in claim 1, comprising isolating the

protein from the interior of the host cell in the form of an assembled S-layer structure.

4. (Previously Presented) The process as claimed in claim 1, wherein the nucleic acid encoding the S-layer protein comprises at least one insertion encoding peptide or polypeptide sequences.

5. (Previously Presented) The process as claimed in claim 4, wherein the at least one insertion is a nucleotide sequence encoding a member selected from the group consisting of cysteine residues, regions with several charged amino acids or tyrosine residues, DNA-binding epitopes, metal-binding epitopes, immunogenic epitopes, allergenic epitopes, antigenic epitopes, streptavidin, enzymes, cytokines, and antibody-binding proteins.

6. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes streptavidin.

7. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes immunogenic epitopes from a herpes virus.

8. (Previously Presented) The process as claimed in claim 5, wherein the at least

one insertion encodes enzymes comprising polyhydroxybutyric acid synthase or bacterial luciferase.

9. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes cytokines comprising interleukins, interferons or tumour necrosis factors.

10. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes antibody-binding proteins comprising protein A or protein G.

11. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes antigenic epitopes which bind cytokines or endotoxins.

12. (Previously Presented) The process as claimed in claim 5, wherein the at least one insertion encodes metal-binding epitopes.

13. (Previously Presented) The process as claimed in claim 1, wherein a nucleic acid encoding a gram-positive signal peptide is arranged in operative linkage at the 5' side of the nucleic acid encoding the S-layer protein.

14. (Previously Presented)The process as claimed in claim 13, wherein the nucleic acid encoding the signal peptide comprises

(a) a signal peptide coding region of the nucleotide sequence of SEQ ID NO:1,

(b) a nucleotide sequence which encodes an amino acid sequence according to SEQ ID NO:2, or

(c) a nucleotide sequence that is at least 80% homologous to at least one nucleotide sequence of (a) or (b).

15. (Previously Presented) An isolated nucleic acid encoding a full-length, crystalline recombinant S-layer protein selected from the group consisting of

(i) a nucleic acid comprising a nucleotide sequence from position 1 to 3684 of SEQ ID NO:1,

(ii) a nucleic acid comprising a nucleotide sequence which encodes an amino acid sequence according to SEQ ID NO:2, and

(iii) a nucleic acid comprising a nucleotide sequence which hybridizes with at least one of the nucleic acid of (i) or (ii) under stringent conditions, wherein the nucleic acid contains at least one peptide or polypeptide-coding insertion within the region encoding the S-layer protein.

16. (Previously Presented) The nucleic acid as claimed in claim 15, wherein the insertion is a site located at position 582, 878, 917, 2504 or 2649 of the

nucleotide sequence of SEQ ID NO. 1.

17. (Previously Presented) A vector comprising at least one copy of a nucleic acid as claimed in claim 16.

Claim 18 (Canceled)

19. (Previously Presented) A transformed cell comprising a nucleic acid as claimed in claim 15 or 16 or a vector as claimed in claim 17, wherein the cell is a gram-negative prokaryotic cell.

20. (Previously Presented) A cell as claimed in claim 19, comprising a recombinant S-layer structure.

Claims 21 – 45 (Canceled)

46. (Previously Presented) A transformed cell wherein the cell is transformed with a nucleic acid as claimed in claim 15.

47. (Previously Presented) A transformed cell wherein the cell is transformed with a vector as claimed in claim 17.

Claims 48-57 (Canceled)

58. (Previously Presented) The process according to claim 1, wherein the nucleic acid of (i) does not contain a signal peptide-coding region.

59. (Previously Presented) The process according to claim 1, wherein said stringent conditions are washing at 55°C in an aqueous low salt buffer comprising 0.2 X SSC.

60. (Previously Presented) The process according to claim 49, wherein said stringent conditions are washing at 60°C in an aqueous low salt buffer comprising 0.2 X SSC.

61. (Previously Presented) The nucleic acid according to claim 15, wherein the nucleic acid of (i) does not contain a signal peptide-coding region.

62. (Previously Presented) The nucleic acid according to claim 15, wherein said stringent conditions are washing at 55°C in an aqueous low salt buffer comprising 0.2 X SSC.

63. (Previously Presented) The nucleic acid according to claim 62, wherein

said stringent conditions are washing at 60°C in an aqueous low salt buffer comprising 0.2 X SSC.

64. (Previously Presented) The cell as claimed in claim 19, wherein the cell is E. coli in origin.

65. (Previously Presented)The process as claimed in claim 7, wherein the herpes virus comprises herpes virus 6 or FMDV.

66. (Currently Amended) A process for production of a crystalline S-layer protein comprising

a) transforming a gram-negative prokaryotic host cell with a full-length nucleic acid encoding an S-layer protein which comprises at least one insertion encoding peptide or polypeptide sequences and selected from the group consisting of

(i) a nucleic acid comprising a nucleotide sequence from position 1 to 3684 of SEQ ID NO.1,

(ii) a nucleic acid comprising a nucleotide sequence ~~corresponding to the nucleic acid of (i) within the scope of the degeneracy of the genetic code,~~ which encodes the same amino acid sequence as the nucleic acid of (i), and

(iii) a nucleic acid comprising a nucleotide sequence which hybridizes with at least one of the nucleic acids of (i) or (ii) under stringent conditions;

(b) culturing the host cell under conditions which induce expression of the nucleic acid and production of the corresponding protein, and

(c) isolating the protein from the host cell.